

Figure 1

```
1  GGAAGTCAGCAGGCGTTGGGAGGGGTGGCGGGGGAATAGCGGCGGCAGC
51  AGCCCCAGCCCTCAGAGAGACAGACAAGGAGGAGGGAGGTGCTGG
101 GGGGACAGCCCCCACCATTCCCTACCGCTATGGGCCCAACCTCCCACTCC
151 CACCTCCCCCTCCATCGGCCGGGCTAGGACACCCCCCAATCCCGTCGCCC
201 CCTTGGCACCCGACACCCCGACAGACAGACAGACAGCCATCCGCCACCA
251 CCGCTGCCCGAGCCTGGCTGGGAGGGGCCAGCCCCCAGGCCCCCTAC
301 CCCTCTGAGGTGGCCAGA ATG GAT TTG TGG CCA GGG GCA TGG
      Met Asp Leu Trp Pro Gly Ala Trp
343 ATG CTG CTG CTG CTC TTC CTG CTG CTG CTC TTC C
      Met Leu Leu Leu Leu Phe Leu Leu Leu Phe L
      10                20
380 TG CTG CCC ACC CTG TGG TTC TGC AGC CCC AGT GCC AAG
      eu Leu Pro Thr Leu Trp Phe Cys Ser Pro Ser Ala Lys
      30
```

Figure 1 (continued)

418 TAC TTC TTC AAG ATG GCC TTC TAC AAT GGC TGG ATC C
Tyr Phe Phe Lys Met Ala Phe Tyr Asn Gly Trp Ile L

40

455 TC TTC CTG GCT GTG CTC GCC ATC CCT GTG TGT GCC GTG
eu Phe Leu Ala Val Leu Ala Ile Pro Val Cys Ala Val

50

493 CGA GGA CGC AAC GTC GAG AAC ATG AAG ATC TTG CGT C
Arg Gly Arg Asn Val Glu Asn Met Lys Ile Leu Arg L

60

70

530 TA ATG CTG CTC CAC ATC AAA TAC CTG TAC GGG ATC CGA
eu Met Leu Leu His Ile Lys Tyr Leu Tyr Gly Ile Arg

80

Figure 1 (continued)

568 GTG GAG GTG CGA GGG GCT CAC CAC TTC CCT CCC TCG C
Val Glu Val Arg Gly Ala His His Phe Pro Pro Ser G

90

605 AG CCC TAT GTT GTT GTC TCC AAC CAC CAG AGC TCT CTC
In Pro Tyr Val Val Val Ser Asn His Gln Ser Ser Leu

100

643 GAT CTG CTT GGG ATG ATG GAG GTA CTG CCA GGC CGC T
Asp Leu Leu Gly Met Met Glu Val Leu Pro Gly Arg C

110

120

680 GT GTG CCC ATT GCC AAG CGC GAG CTA CTG TGG GCT GGC
ys Val Pro Ile Ala Lys Arg Glu Leu Leu Trp Ala Gly

130

Figure 1 (continued)

718 TCT GCC GGG CTG GCC TGC TGG CTG GCA GGA GTC ATC T
Ser Ala Gly Leu Ala Cys Trp Leu Ala Gly Val Ile P

140

755 TC ATC GAC CGG AAG CGC ACG GGG GAT GCC ATC AGT GTC
he Ile Asp Arg Lys Arg Thr Gly Asp Ala Ile Ser Val

150

793 ATG TCT GAG GTC GCC CAG ACC CTG CTC ACC CAG GAC G
Met Ser Glu Val Ala Gln Thr Leu Leu Thr Gln Asp V

170

160

830 TG AGG GTC TGG GTG TTT CCT GAG GGA ACG AGA AAC CAC
al Arg Val Trp Val Phe Pro Glu Gly Thr Arg Asn His

180

Figure 1 (continued)

868 AAT GGC TCC ATG CTG CCC TTC AAA CGT GGC GCC TTC C
Asn Gly Ser Met Leu Pro Phe Lys Arg Gly Ala Phe H

190

905 AT CTT GCA GTG CAG GCC CAG GTT CCC ATT GTC CCC ATA
is Leu Ala Val Gln Ala Gln Val Pro Ile Val Pro Ile

200

943 GTC ATG TCC TCC TAC CAA GAC TTC TAC TGC AAG AAG G
Val Met Ser Ser Tyr Gln Asp Phe Tyr Cys Lys Lys G

220

210

980 AG CGT CGC TTC ACC TCG GGA CAA TGT CAG GTG CGG GTG
lu Arg Arg Phe Thr Ser Gly Gln Cys Gln Val Arg Val

230

Figure 1 (continued)

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1018 CTG CCC CCA GTG CCC ACG GAA GGG CTG ACA CCA GAT G
      Leu Pro Pro Val Pro Thr Glu Gly Leu Thr Pro Asp A
      240
1055 AC GTC CCA GCT CTG GCT GAC AGA GTC CGG CAC TCC ATG
      sp Val Pro Ala Leu Ala Asp Arg Val Arg His Ser Met
      250
1093 CTC ACT GTT TTC CGG GAA ATC TCC ACT GAT GGC CGG G
      Leu Thr Val Phe Arg Glu Ile Ser Thr Asp Gly Arg G
      260      270
1130 GT GGT GAC TAT CTG AAG AAG CCT GGG GGC GGT GGG
      ly Gly Gly Asp Tyr Leu Lys Lys Pro Gly Gly Gly 280
1168 TGA ACCCTGGCTCTGAGCTCTCCTCCCATCTGTCCCCCATCTTCCTCCC
1216 CACACCTACCCAGTGGGCCCTGAAGCAGGCCAAACCCTCTTCCTT
1266 GTCTCCCCCTCCCCACTTATTCTCCTCTTTGGAACTCTCAACTTCTGAA
```

Figure 1 (continued)

1316 GTGAATGTGGATACAGCGCCACTCCTGCCCCCTCTTGGCCCCCATCCATGG
1366 ACTCTTGCCCTCGGTGCAGTTTCCACTCTTGACCCCCACCTCCTACTGTCT
1416 TGTCTGTGGACAGTTGCCCTCCCCCTCATCTCCAGTGACTCAGCCTACAC
1466 AAGGAGGGGAACATTCCATCCCCCAGTGGAGTCTTCCCTATGTGTCTT
1516 CTC TACCCCTCTACCCCCACATTGGCCAGTGGACTCATCCATTCTTTGGA
1566 ACAAAATCCCCCCCCACTCCAAAGTCCATGGATTCAATGGACTCATCCATT
1616 TGTGAGGAGGACTTCTCGCCCTCTGGCTGGAAGCTGATACCTGAAGCACT
1666 CCCAGGCTCATCCTGGGAGCTTTCCCTCAGCACCTTCACCTTCCCCCAG
1716 TGTAGCCCTCCTGTCAGTGGGGGCTGGACCCCTTCTAAATTCAGAGGTCTCAT
1766 GCCTGCCCTTGCCCCAGATGCCCCAGGGTCTGTGCACTCTCTGGGATACCCAGT
1816 TCAGTCTCCACATTTCTGGTTTTTCTGTCCCCCATAGTACAGTTCTTCAGTG
1866 GACATGACCCCAAGCCCCCTGCAGCCCCCTGCTGACCATCTCACCAGAC
1916 ACAAGGGAAGAAGCAGACATCAGGTGCTGCACTCACTTCTGCCCCCTGG
1966 GGAGTTGGGAAAGGAACGAACCTGGCTGGAGGGGATAGGAGGGCTTTT

Figure 1 (continued)

2016 AATTATTTCTTTTCTGTGAGGCTTCCCCCTCTCTGAGCCAGTTTTC
2066 TTTCTTCCCTGGTGGCATTAGCCACTCCCTGCCCTCTCACTCCAGACCTGTT
2116 CCCACAACCTGGGAGGTAGGCTGGGAGCAAAAGGAGAGGGTGGGACCCAG
2166 TTTTGCGTGGTGGTTTATTAATTATCTGGATAACAGCAAAAAAACTG
2216 AAAATAAGAGAGAGAGAAAAA

Figure 2

Human LPAAT	1	MDLWPGAWM-	10	20	30	40	50
Yeast LPAAT	1	MSV-IGRFLY	YLRSVL-VVL	AL-AG-----	LL-LFLLLPT	LWFCSPSAKY	F-----FKMA
E.coli LPAAT	1	M-----	LYIF	RL-IITVIYS	ILVCVFGSIY	-----C-----	-----G
Maize LPAAT	1	MAI-----	PLVLVVL	PLGLLFLLSG	LIVNAIQAVL	FVTIRPESKS	
Human LPAAT	51	FYNGWILFLA	VLAIPVCAVR	GRNVENMKIL	RLMLLHIKYL	-YGIRVEVRG	
Yeast LPAAT	51	FY-----G	VIASILCTLI	GKQHLAQWIT	ARCFYHVMKL	MLGLDV---K	
E.coli LPAAT	51	-----	CLFS	PRNPKHVATF	GHMFGRLAPL	-FGLKVECRK	
Maize LPAAT	51	FYRRINRFLA	EL-----	-----L	WLQLVWVVDW	WAGVKVQLHA	
Human LPAAT	101	AHHF-PPSQ-	PYVVVSNHQ	SSLDLLGMME	VL--PGRC--	-VPI-AKREL	
Yeast LPAAT	101	VVGE-ENLAK	KPYIMIANHQ	STLDIFMLGR	IF--PPGCT-	---VTAKKSL	
E.coli LPAAT	101	PTDA-ESYG-	NAIYIANHQ	NNYDMVTASN	IVQ-PP----	TVTV-GKKSL	
Maize LPAAT	101	DEETYRSMGK	EHALIISNHR	SDIDWL-IGW	ILAQRSGCLG	STLAVMCKSS	
Human LPAAT	151	LWAGSAGLAC	W---LAGVIF	IDRKRTGDAI	SVMSEVAQTL	LTQDVRVWV-	
Yeast LPAAT	151	KYVPFLG--	WFMAISGTYF	LDRSKRQEI	DTLNKGLENV	KKNKRALWV-	
E.coli LPAAT	151	LWIPFFGQLY	W---LTGNLL	IDRNNRTKAH	GTIAEVVNHF	KKRRISIMW-	
Maize LPAAT	151	KFLPVIQWSM	WF---AEYLF	LEERS-WAKDE	KTLKWGLQRL	KDFPRPFWLA	
Human LPAAT	201	FPEGTRNNHN	GS-----	-----	MLPFKRGAFH	LAVQAQVPIV	
Yeast LPAAT	201	FPEGTRSYT	SEL-----	-----T	MLPFKKGAFFH	LAQQKIPIV	
E.coli LPAAT	201	FPEGTRSRG	RGL-----	-----	-LPFKTGAFH	AAIAAGVPII	
Maize LPAAT	201	LFVEGTRFTV	AKLLAAQEYA	ASQGLPAPRN	VLIPRTKGFV	SAVSIMRDFV	

Figure 2 (continued)

Human LPAAT	251	<u>P</u> <u>I</u> <u>V</u> <u>M</u> <u>S</u> <u>S</u> <u>Y</u> <u>Q</u> <u>D</u> <u>F</u>	<u>Y</u> <u>C</u> <u>K</u> <u>K</u> <u>E</u> <u>R</u> <u>R</u> <u>F</u> <u>T</u> <u>S</u>	<u>G</u> <u>Q</u> <u>C</u> <u>Q</u> <u>V</u> <u>R</u> <u>V</u> <u>L</u> <u>P</u> <u>P</u>	<u>V</u> <u>P</u> <u>T</u> <u>E</u> <u>G</u> <u>L</u> <u>T</u> <u>P</u> <u>D</u> <u>D</u>	<u>V</u> <u>P</u> <u>A</u> <u>L</u> <u>A</u> <u>D</u> <u>R</u>
Yeast LPAAT	251	<u>P</u> <u>V</u> <u>V</u> <u>S</u> <u>N</u> <u>T</u> <u>S</u> <u>T</u> <u>L</u>	<u>V</u> <u>S</u> <u>P</u> <u>K</u> <u>Y</u> <u>G</u> <u>V</u> <u>F</u> <u>N</u> <u>R</u>	<u>G</u> <u>C</u> <u>M</u> <u>I</u> <u>V</u> <u>R</u> <u>I</u> <u>L</u> <u>K</u> <u>P</u>	<u>I</u> <u>S</u> <u>T</u> <u>E</u> <u>N</u> <u>L</u> <u>T</u> <u>K</u> <u>D</u> <u>K</u>	<u>I</u> <u>G</u> <u>E</u> <u>F</u> <u>A</u> <u>E</u> <u>K</u>
E.coli LPAAT	251	<u>P</u> <u>V</u> <u>C</u> <u>V</u> <u>S</u> <u>T</u> <u>T</u> <u>S</u> <u>N</u> <u>K</u>	<u>I</u> <u>-</u> <u>N</u> <u>L</u> <u>N</u> <u>R</u> <u>L</u> <u>H</u> <u>N</u>	<u>G</u> <u>L</u> <u>V</u> <u>I</u> <u>V</u> <u>E</u> <u>M</u> <u>L</u> <u>P</u> <u>P</u>	<u>I</u> <u>D</u> <u>V</u> <u>S</u> <u>Q</u> <u>Y</u> <u>G</u> <u>K</u> <u>D</u> <u>Q</u>	<u>V</u> <u>R</u> <u>E</u> <u>L</u> <u>A</u> <u>A</u> <u>H</u>
Maize LPAAT	251	<u>P</u> <u>A</u> <u>I</u> <u>Y</u> <u>D</u> <u>T</u> <u>T</u> <u>-</u> <u>V</u>	<u>I</u> <u>V</u> <u>P</u> <u>K</u> <u>D</u> <u>S</u> <u>P</u> <u>Q</u> <u>P</u> <u>T</u>	<u>M</u> <u>L</u> <u>R</u> <u>I</u> <u>L</u> <u>K</u> <u>G</u> <u>Q</u> <u>S</u> <u>S</u>	<u>V</u> <u>I</u> <u>H</u> <u>V</u> <u>R</u> <u>M</u> <u>K</u> <u>R</u> <u>H</u> <u>A</u>	<u>M</u> <u>S</u> <u>E</u> <u>M</u> <u>P</u> <u>K</u> <u>S</u> <u>D</u> <u>E</u> <u>D</u>
Human LPAAT	301	-----	<u>V</u> <u>R</u> <u>H</u> <u>S</u> <u>M</u> <u>L</u> <u>T</u> <u>V</u> <u>-</u> <u>F</u>	<u>R</u> <u>E</u> <u>I</u> <u>S</u> <u>T</u> <u>D</u> <u>G</u> <u>R</u> <u>G</u> <u>G</u>	<u>G</u> <u>D</u> <u>Y</u> <u>L</u> <u>K</u> <u>K</u> <u>P</u> <u>G</u> <u>G</u>	<u>G</u> <u>*</u>
Yeast LPAAT	301	-----	<u>V</u> <u>R</u> <u>D</u> <u>Q</u> <u>M</u> <u>V</u> <u>D</u> <u>T</u> <u>-</u> <u>L</u>	<u>K</u> <u>E</u> <u>I</u> <u>G</u> <u>Y</u> <u>S</u> <u>P</u> <u>A</u> <u>I</u> <u>N</u>	<u>D</u> <u>T</u> <u>T</u> <u>L</u> <u>P</u> <u>P</u> <u>Q</u>	-----
E.coli LPAAT	301	-----	<u>C</u> <u>R</u> <u>S</u> <u>I</u> <u>M</u> <u>E</u> <u>Q</u> <u>K</u> <u>-</u> <u>I</u>	<u>A</u> <u>E</u> <u>L</u> <u>D</u> <u>K</u> <u>E</u> <u>V</u> <u>A</u> <u>E</u>	-----	<u>R</u> <u>E</u> <u>A</u> <u>A</u> <u>G</u> <u>K</u>
Maize LPAAT	301	<u>V</u> <u>S</u> <u>K</u> <u>W</u> <u>C</u> <u>K</u> <u>D</u> <u>I</u> <u>F</u> <u>V</u>	<u>A</u> <u>K</u> <u>D</u> <u>A</u> <u>L</u> <u>L</u> <u>D</u> <u>K</u> <u>H</u> <u>L</u>	<u>A</u> <u>T</u> <u>G</u> <u>T</u> <u>F</u> <u>D</u> <u>E</u> <u>E</u> <u>I</u> <u>R</u>	<u>P</u> <u>I</u> <u>G</u> <u>R</u> <u>P</u> <u>V</u> <u>K</u> <u>S</u> <u>L</u> <u>L</u>	<u>V</u> <u>T</u> <u>L</u> <u>F</u> <u>W</u> <u>S</u> <u>C</u> <u>L</u> <u>L</u> <u>L</u>
Human LPAAT	351	.....	.....	.....	.....	.....
Yeast LPAAT	351	-- <u>A</u> <u>I</u> <u>E</u> <u>Y</u> -- <u>A</u>	<u>A</u> <u>L</u> ----- <u>Q</u>	<u>H</u> <u>D</u> <u>K</u> <u>K</u> <u>V</u> <u>N</u> <u>K</u> <u>K</u> <u>I</u> <u>K</u>	<u>N</u> <u>E</u> <u>P</u> <u>V</u> <u>P</u> <u>S</u> <u>V</u> <u>S</u> <u>I</u> <u>S</u>	<u>N</u> <u>D</u> <u>V</u> <u>N</u> <u>T</u> <u>H</u> <u>N</u> <u>E</u> <u>G</u> <u>S</u>
E.coli LPAAT	351	.....	.....	.....	.....	.....
Maize LPAAT	351	<u>F</u> <u>G</u> <u>A</u> <u>I</u> <u>E</u> <u>F</u> <u>F</u> <u>K</u> <u>W</u> <u>T</u>	<u>Q</u> <u>L</u> <u>L</u> <u>S</u> <u>T</u> <u>W</u> <u>R</u> <u>G</u> <u>V</u> <u>A</u>	<u>F</u> <u>T</u> <u>A</u> <u>A</u> <u>G</u> <u>M</u> <u>A</u> <u>L</u> <u>V</u> <u>T</u>	<u>G</u> <u>V</u> <u>M</u> <u>H</u> <u>V</u> <u>F</u> <u>I</u> <u>M</u> <u>F</u> <u>S</u>	<u>Q</u> <u>A</u> ----- <u>E</u> <u>R</u> <u>S</u>
Human LPAAT	401	.....	.....	.....	.....	.....
Yeast LPAAT	401	<u>S</u> ----- <u>V</u>	<u>K</u> <u>K</u> <u>M</u> <u>H</u>*	.....	.....	.....
E.coli LPAAT	401	.....	.....	.....	.....	.....
Maize LPAAT	401	<u>S</u> <u>S</u> <u>A</u> <u>R</u> <u>A</u> <u>A</u> <u>R</u> <u>N</u> <u>R</u> <u>V</u>	<u>K</u> <u>K</u> <u>E</u>*	.....	.....	.....

Figure 3

10	20	30	40	50	60
GGAGCGAGCT	GGCGGCGCCG	TCGGGGGCGG	GGCCGGGGCCA	TGGAGCTGTG	GCCGTGTCTG
70	80	90	100	110	120
GCCGCGGCGC	TGCTGTGCT	GCTGCTGCTG	GTGCAGCTGA	GCCGCGCGGC	CGAGTTCTAC
130	140	150	160	170	180
GCCAAGGTG	CCCTGTACTG	CGCGCTGTGC	TTCACGGTGT	CCGCGGTGGC	CTCGCTCGTC
190	200	210	220	230	240
TGCCTGCTGT	GCCACGGCGG	CCGGACGGTG	GAGAACATGA	GCATCATCGG	CTGGTTCTGTG
250	260	270	280	290	300
CGAAGCTTCA	AGTACTTTTA	CGGGCTCCGC	TTCGAGGTGC	GGGACCCGCG	CAGGCTGCAG
310	320	330	340	350	360
GAGGCCCGTC	CCTGTGTCAT	CGTCTCCAAC	CACCAGAGCA	TCCTGGACAT	GATGGGCCCTC
370	380	390	400	410	420
ATGGAGGTCC	TTCCGGAGCG	CTGCGTGCAG	ATCGCCAAGC	GGGAGCTGCT	CTTCCCTGGGG
430	440	450	460	470	480
CCCGTGGGCC	TCATCATGTA	CCTCGGGGGC	GTCTTCTTCA	TCAACCGGCA	GCGCTCTAGC
490	500	510	520	530	540
ACTGCCATGA	CAGTGATGGC	CGACCTGGGC	GAGCGCATGG	TCAGGGAGAA	CCTCAAAGTG

Figure 3 (continued)

550	560	570	580	590	600
TGGATCTATC	CCGAGGGTAC	TCGCAACGAC	AATGGGGACC	TGCTGCCTTT	TAAGAAGGGC
610	620	630	640	650	660
GCCTTCTACC	TGGCAGTCCA	GGCACAGGTG	CCCATCGTCC	CCGTGGTGTA	CTCTTCCTTC
670	680	690	700	710	720
TCCTCCTTCT	ACAACACCAA	GAAGAAATTCT	TTCACCTTCAG	GAACAGTCAC	AGTGCAGGTG
730	740	750	760	770	780
CTGGAAGCCA	TCCCCACCCAG	CGGCCTCACT	GCGGGGGAGC	TCCCTGCGGT	CGTGGACACC
790	800	810	820	830	840
TGCCACC GGG	CCATGAGGAC	CACCTTCCCTC	CACATCTCCA	AGACCCCCCA	GGAGAACGGG
850	860	870	880	890	900
GCCACTGCGG	GGTCTGGCGT	GCAGCCGGCC	CAGTAGCCCA	GACCACGGCA	GGGCATGACC
910	920	930	940	950	960
TGGGGAGGGC	AGGTGGAAGC	CGATGGCTGG	AGGATGGCA	GAGGGGACTC	CTCCCCGGCTT
970	980	990	1000	1010	1020
CCAAATACCA	CTCTGTCCGG	CTCCCCCAGC	TCTCACTCAG	CCCCGGAAGC	AGGAAGCCCC
1030	1040	1050	1060	1070	1080
TTCTGTCACT	GGTCTCAGAC	ACAGGCCCCCT	GGTGTCCTCT	GCAGGGGGCT	CAGCTGGACC

Figure 3 (continued)

1090	1100	1110	1120	1130	1140
CTCCCCGGC	TCGAGGCAG	GGA CTGCGC	CCACGGCACC	TCTGGGNGCT	GGGNTGATAA
1150	1160	1170	1180	1190	1200
AGATGAGGCT	TGCGGCTGTG	GCCCCGCTGGT	GGGCTGAGCC	ACAAGGCCCC	CGATGGCCCA
1210	1220	1230	1240	1250	1260
GGAGCAGATG	GGAGGACCCC	GAGGCCAGGA	GTCCCAGACT	CACGCACCCCT	GGGCCACAGG
1270	1280	1290	1300	1310	1320
GAGCCGGGAA	TCGGGGCCCTG	CTGCTCCTGC	TGGCCTGAAG	AATCTGTGGG	GTCAGCACTG
1330	1340	1350	1360	1370	1380
TACTCCGTTG	CTGTTTTTTT	ATAAACACAC	TCTTGGA AAA	AAAAAAA AAA	AAAAAAA AAA
1390	1400	1410	1420	1430	1440
AAA.....	.....	.....	.....	.....	.....

Figure 4

10	20	30	40	50
GGAGCGAGCTGGCGGCGCGCTCGGGCGCGCGCGCGGCC	ATG	GAG	CTG	TGG CCG
	Met	Glu	Leu	Trp Pro
60	70	80	90	
TGT CTG GCC GCG GCG CTG CTG TTTG CTG CTG	CTG	CTG	CAG	CTG
Cys Leu Ala Ala Ala Glu Phe Tyr Ala Lys Val Ala Leu	Leu	Leu	Val	Gln Leu
100	110	120	130	140
AGC CGC GCG GCC GAG TTC TAC GCC AAG GTC GCC	CTG	TAC	TGC	GCG
Ser Arg Ala Ala Ala Glu Phe Tyr Ala Lys Val Ala Leu	Tyr	Cys	Ala	
150	160	170	180	
CTG TGC TTC ACG GCG GTG TCC GCC GTG GCC	TCG	CTC	GTC	CTG
Leu Cys Phe Thr Val Ser Ala Val Ala Ser Leu	Val	Cys	Leu	Leu
190	200	210	220	230
TGC CAC GGC GGC CCG ACG GTG GAG AAC	ATG	AGC	ATC	ATC GGC TGG
Cys His Gly Gly Arg Thr Val Glu Asn Met Ser	Ile	Ile	Gly	Trp

Title: METHOD OF SCREENING
COMPOUNDS THAT INHIBIT
LYSOPHOSPHATIDIC ACID
ACYLTRANSFERASE

Inventors: David W. LEUNG et al.
Docket No.: 077319-0381

Figure 4 (continued)

240	250	260	270	
TTC GTG CGA AGC TTC AAG TAC TTT TAC GGG CTC CGC TTC GAG GTG				
Phe Val Arg Ser Phe Lys Tyr Tyr Phe Tyr Gly Leu Arg Phe Glu Val				80
	70			
280	290	300	310	320
CGG GAC CCG CGC AGG CTG CAG GAG GCC CGT CCC TGT GTC ATC GTC				
Arg Asp Pro Arg Arg Leu Gln Glu Ala Arg Pro Cys Val Ile Val				
			90	
330	340	350	360	
TCC AAC CAC CAG AGC ATC CTG GAC ATG ATG GGC CTC ATG GAG GTC				
Ser Asn His Gln Ser Ile Leu Asp Met Met Gly Leu Met Glu Val				110
	100			
370	380	390	400	410
CTT CCG GAG CGC TGC GTG CAG ATC GCC AAG CGG GAG CTG CTC TTC				
Leu Pro Glu Arg Cys Val Gln Ile Ala Lys Arg Glu Leu Leu Phe				
			120	
420	430	440	450	
CTG GGG CCC GTG GGC CTC ATC ATG TAC CTC GGG GGC GTC TTC TTC				
Leu Gly Pro Val Gly Leu Ile Met Tyr Leu Gly Gly Val Phe Phe				140
	130			
460	470	480	490	500
ATC AAC CGG CAG CGC TCT AGC ACT GCC ATG ACA GTG ATG GCC GAC				
Ile Asn Arg Gln Arg Ser Ser Thr Ala Met Thr Val Met Ala Asp				
			150	

Figure 4 (continued)

510	520	530	540	
CTG GGC GAG CGC ATG GTC AGG GAG AAC CTC AAA GTG TGG ATC TAT				
Leu Gly Glu Arg Met Val Arg Glu Asn Leu Lys Val Trp Ile Tyr				170
	160			
550	560	570	580	590
CCC GAG GGT ACT CGC AAC GAC AAT GGG GAC CTG CTG CCT TTT AAG				
Pro Glu Gly Thr Arg Asn Asp Asn Gly Asp Leu Leu Pro Phe Lys				
			180	
600	610	620	630	
AAG GGC GCC TTC TAC CTG GCA GTC CAG GCA CAG GTG CCC ATC GTC				
Lys Gly Ala Phe Tyr Leu Ala Val Gln Ala Gln Val Pro Ile Val				200
	190			
640	650	660	670	680
CCC GTG GTG TAC TCT TCC TTC TCC TCC TTC TAC AAC ACC AAG AAG				
Pro Val Val Tyr Ser Ser Phe Ser Ser Phe Tyr Asn Thr Lys Lys				
			210	
690	700	710	720	
AAG TTC TTC ACT TCA GGA ACA GTC ACA GTG CAG GTG CTG GAA GCC				
Lys Phe Phe Thr Ser Gly Thr Val Thr Val Gln Val Leu Glu Ala				230
			220	

Title: METHOD OF SCREENING
COMPOUNDS THAT INHIBIT
LYSOPHOSPHATIDIC ACID
ACYLTRANSFERASE

Inventors: David W. LEUNG et al.

Docket No.: 077319-0381

Figure 4 (continued)

730	740	750	760	770
ATC CCC ACC AGC GGC CTC ACT GCG GCG GAC GTC CCT GCG CTC GTG				
Ile Pro Thr Ser Gly Leu Thr Ala Ala Asp Val Pro Ala Leu Val				
			240	
		790	800	810
780	GAC ACC TGC CAC GCG GCC ATG AGG ACC ACC TTC CTC CAC ATC TCC			
Asp Thr Cys His Arg Ala Met Arg Thr Thr Phe Leu His Ile Ser				
	250			260
820	830	840	850	860
AAG ACC CCC CAG GAG AAC GGG GCC ACT GCG GGG TCT GGC GTG CAG				
Lys Thr Pro Gln Glu Asn Gly Ala Thr Ala Gly Ser Gly Val Gln				
				270
870	880	890	900	910
CCG GCC CAG TAG CCCAGACCACGGCAGGGCATGACCTGGGGAGGGCAGGTGGAAGC				
Pro Ala Gln ***				
930	940	950	960	970
				980
	CGATGGCTGGAGGATGGGCAGAGGGGACTCCTCCCGGCTTCCAAATACCACCTGTGTCCGG			
990	1000	1010	1020	1030
				1040
	CTCCCCCAGCTCTCACTCAGCCCCGGGAAGCAGGAAGCCCCCTTCTGTCACTGGTCTCAGAC			
	1050	1060	1070	1080
				1090
				1100
	ACAGGCCCCCTGGTGTCCCCCTGCAGGGGGCTCAGCTGAGACCCCTCCCGGCTCGAGGGCAG			

Figure 4 (continued)

1110	1120	1130	1140	1150	1160
	GGACTCGGCCCCACGGCACCTCTGGGNGCTGGGNTGATAAAGATGAGGCTTGGCGGCTGTG				
1170	1180	1190	1200	1210	1220
	GGCCGCTGGTGGGCTGAGCCACAAAGGCCCCCGATGGCCACAGGAGCAGATGGGAGGACCCC				
1230	1240	1250	1260	1270	1280
	GAGGCCAGGAGTCCAGACTCACGCACCCCTGGGCCACAGGGAGCCGGGAATCGGGGCCCTG				
1290	1300	1310	1320	1330	1340
	CTGCTCCTGCTGGCCTGAAGAATCTGTGGGTCAGCACTGTACTCCGTTGCTGTTTTTTT				
1350	1360	1370	1380		
	ATAAACACACTCTTGGAAAAA				

Figure 5
Alignment of LPAAT Sequences.

	10	20	30	40	50
Human LPAAT- β	1	---	---	MEL WPC-----	LA AALLLLLV
Human LPAAT- α	1	---	---	MDL WPGAWMLLL	LFLLLFLLP
Yeast LPAAT	1	---	---	MSV --IGRFLYYL	RSVLWLALA
E.coli LPAAT	1	---	---	---	---
H.influenzae	1	---	---	---	---
S.typhimurii	1	---	---	---	---
L.douglassi	1	MAKIRTSS-L	RNR	-----	RQLKP AVAATAD--D DKDGVFW--
C. nucifera	1	MDASGASSFL	RGRCLSCFK	ASFGMSQPKD	AAGQPSRPA DADDFIVDD
Human LPAAT- β	51	QL---	SRAAE	FVAKVAL-YC	ALCFTVSAVA SLVCLLCHGG RTVENM-SII
Human LPAAT- α	51	TLWFCS	ESAK	YFFKMAF-YN	GWILFLAVLA IPVCAV--RG RNVENM-KIL
Yeast LPAAT	51	G---CG---	FY-----	---	GVIA SILCTLICKQ HLAQWI-TAR
E.coli LPAAT	51	---	MLYI	FRILIVIVYS	ILVC---VFG SIYCLFSPRN PKHV---ATF
H.influenzae	51	---	MLKL	LRIFLVLIC	ILIC---VLG TTYSFIREKN PSNV---GIV
S.typhimurii	51	---	MLYI	FRILIVIVYS	ILVC---VFG SIYCLFSPRN PKHV---ATF
L.douglassi	51	---	LLSC	FKIFVCFEFT	WLIITAVANG LITWLLLPWP YMRIRLGNLY
C. nucifera	51	DRWTIVILSV	VRIACFL--	SMNVTTIVN	MIMILLPWP VARIRQGNLY

Figure 5 (continued)

	110	120	130	140	150
Human LPAAT- β	101 <u>GW</u> <u>FV</u> <u>RS</u> <u>F</u> <u>KY</u> - -- <u>FY</u> <u>GI</u> <u>R</u> <u>F</u> <u>EV</u> <u>RD</u> <u>PR</u> <u>LQ</u> <u>FA</u> <u>R</u> <u>PC</u> <u>VI</u> <u>VS</u> <u>NH</u> <u>QS</u> <u>IL</u> <u>DM</u> <u>GL</u> <u>ME</u> <u>V</u>				
Human LPAAT- α	101 <u>RL</u> <u>ML</u> <u>I</u> <u>HI</u> <u>KY</u> - -- <u>LY</u> <u>G</u> <u>IR</u> <u>VE</u> <u>V</u> <u>RG</u> <u>AH</u> <u>HF</u> <u>PP</u> <u>SQ</u> <u>PV</u> <u>VV</u> <u>VS</u> <u>NH</u> <u>QS</u> <u>SL</u> <u>DL</u> <u>LG</u> <u>ME</u> <u>V</u>				
Yeast LPAAT	101 <u>CFY</u> - <u>HVM</u> <u>KL</u> - -- <u>ML</u> <u>GL</u> <u>DV</u> <u>KV</u> <u>VGE</u> <u>EN</u> <u>LA</u> <u>K-K</u> <u>PY</u> <u>IM</u> <u>IA</u> <u>NH</u> <u>QS</u> <u>TLD</u> <u>IF</u> <u>ML</u> <u>GR</u> <u>I</u>				
E.coli LPAAT	101 <u>GH</u> <u>MF</u> <u>GR</u> <u>L</u> --- <u>AP</u> <u>LF</u> <u>GL</u> <u>KV</u> <u>EC</u> <u>RK</u> <u>PT</u> <u>DA</u> <u>ES</u> <u>YG</u> <u>NA</u> <u>IY</u> <u>IA</u> <u>NH</u> <u>QN</u> <u>NY</u> <u>DM</u> <u>VT</u> <u>AS</u> <u>NI</u>				
H.influenzae	101 <u>AR</u> <u>WF</u> <u>GR</u> <u>L</u> - <u>FT</u> <u>YPL</u> <u>FGL</u> <u>KV</u> <u>EH</u> <u>RI</u> <u>PQ</u> <u>DQ</u> <u>KQ</u> <u>IS</u> <u>RA</u> <u>IY</u> <u>IG</u> <u>NH</u> <u>QN</u> <u>NY</u> <u>DM</u> <u>VT</u> <u>IS</u> <u>YM</u>				
S.typhimurii	101 <u>GH</u> <u>MF</u> <u>GR</u> <u>L</u> - <u>FT</u> <u>AP</u> <u>LF</u> <u>GL</u> <u>KV</u> <u>EC</u> <u>RK</u> <u>PA</u> <u>DA</u> <u>EN</u> <u>YG</u> <u>NA</u> <u>IY</u> <u>IA</u> <u>NH</u> <u>QN</u> <u>NY</u> <u>DM</u> <u>VT</u> <u>AA</u> <u>NI</u>				
L.douglassi	101 <u>GH</u> <u>II</u> <u>IG</u> <u>LV</u> -- <u>IW</u> <u>IY</u> <u>GI</u> <u>PI</u> <u>KI</u> <u>QG</u> <u>SE</u> <u>HI</u> <u>KK</u> <u>RA</u> <u>IFT</u> <u>YI</u> <u>SN</u> <u>HA</u> <u>S</u> <u>PI</u> <u>DA</u> <u>FF</u> <u>V</u> <u>MW</u> <u>L</u>				
C. nucifera	101 <u>GH</u> <u>VT</u> <u>GR</u> <u>ML</u> <u>FT</u> <u>MW</u> <u>IL</u> <u>GN</u> <u>PT</u> <u>TI</u> <u>EG</u> <u>SE</u> <u>FS</u> <u>N</u> <u>T</u> <u>RA</u> <u>I</u> -- <u>YI</u> <u>CN</u> <u>HA</u> <u>S</u> <u>LV</u> <u>D</u> <u>IF</u> <u>LI</u> <u>MW</u> <u>L</u>				
Human LPAAT- β	151 <u>LP</u> <u>ER</u> <u>CV</u> <u>QI</u> <u>AK</u> <u>RE</u> <u>LL</u> <u>FI</u> <u>GP</u> <u>V</u> - - <u>GL</u> <u>IM</u> <u>YL</u> <u>GV</u> <u>FF</u> <u>IN</u> <u>RQ</u> <u>RS</u> <u>ST</u> <u>AM</u> <u>T</u> -- <u>VM</u> <u>AI</u> <u>IL</u>	160	170	180	190
Human LPAAT- α	151 <u>LP</u> <u>GR</u> <u>CV</u> <u>PI</u> <u>AK</u> <u>RE</u> <u>LL</u> <u>W</u> <u>AG</u> <u>SA</u> - - <u>GL</u> <u>AC</u> <u>WL</u> <u>AG</u> <u>V</u> <u>I</u> <u>F</u> <u>ID</u> <u>R</u> <u>K</u> <u>RT</u> <u>GD</u> <u>AI</u> <u>S</u> -- <u>VM</u> <u>SE</u> <u>V</u>				
Yeast LPAAT	151 <u>FPP</u> <u>GC</u> <u>IV</u> <u>TAK</u> <u>KSL</u> <u>KV</u> <u>VP</u> <u>FL</u> - - <u>GW</u> <u>F</u> <u>MA</u> <u>LS</u> <u>GT</u> <u>YF</u> <u>LD</u> <u>RS</u> <u>KR</u> <u>QE</u> <u>AI</u> <u>D</u> -- <u>T</u> <u>IN</u> <u>KG</u>				
E.coli LPAAT	151 <u>VQP</u> <u>PI</u> <u>TV</u> <u>CK</u> <u>KSL</u> <u>LI</u> <u>WI</u> <u>PI</u> <u>FF</u> - - <u>GQ</u> <u>LY</u> <u>WL</u> <u>TGN</u> <u>LL</u> <u>ID</u> <u>RN</u> <u>NR</u> <u>TK</u> <u>AH</u> <u>G</u> -- <u>T</u> <u>IA</u> <u>EV</u>				
H.influenzae	151 <u>VQ</u> <u>PR</u> <u>IV</u> <u>SV</u> <u>CK</u> <u>KSL</u> <u>LI</u> <u>WI</u> <u>PI</u> <u>FF</u> <u>F</u> <u>TG</u> <u>IL</u> <u>Y</u> <u>W</u> <u>LT</u> <u>GN</u> <u>IF</u> <u>LD</u> <u>RN</u> <u>RT</u> <u>CK</u> <u>AH</u> <u>N</u> -- <u>T</u> <u>MS</u> <u>QL</u>				
S.typhimurii	151 <u>VQ</u> <u>PI</u> <u>TV</u> <u>TV</u> <u>CK</u> <u>KSL</u> <u>LI</u> <u>WI</u> <u>PI</u> <u>FF</u> <u>F</u> <u>TG</u> <u>Q</u> <u>LY</u> <u>WL</u> <u>TGN</u> <u>LL</u> <u>ID</u> <u>RN</u> <u>NR</u> <u>AK</u> <u>AH</u> <u>S</u> -- <u>T</u> <u>IA</u> <u>AV</u>				
L.douglassi	151 <u>AP</u> <u>IG</u> <u>TV</u> <u>GV</u> <u>AK</u> <u>KE</u> <u>VI</u> <u>W</u> <u>Y</u> <u>PI</u> <u>LG</u> <u>Q</u> -- <u>LY</u> <u>T</u> <u>IA</u> <u>HH</u> <u>IR</u> <u>ID</u> <u>RS</u> <u>NP</u> <u>AA</u> <u>AI</u> <u>Q</u> <u>S</u> <u>F</u> <u>IM</u> <u>KE</u> <u>A</u>				
C. nucifera	151 <u>IP</u> <u>KG</u> <u>TV</u> <u>T</u> <u>IAK</u> <u>KE</u> <u>II</u> <u>W</u> <u>Y</u> <u>PI</u> <u>LG</u> <u>Q</u> <u>FT</u> <u>LY</u> <u>V</u> <u>LA</u> <u>NH</u> <u>QR</u> <u>ID</u> <u>RS</u> <u>NP</u> <u>SA</u> <u>AI</u> <u>ES</u> -- <u>I</u> <u>KE</u> <u>V</u>				

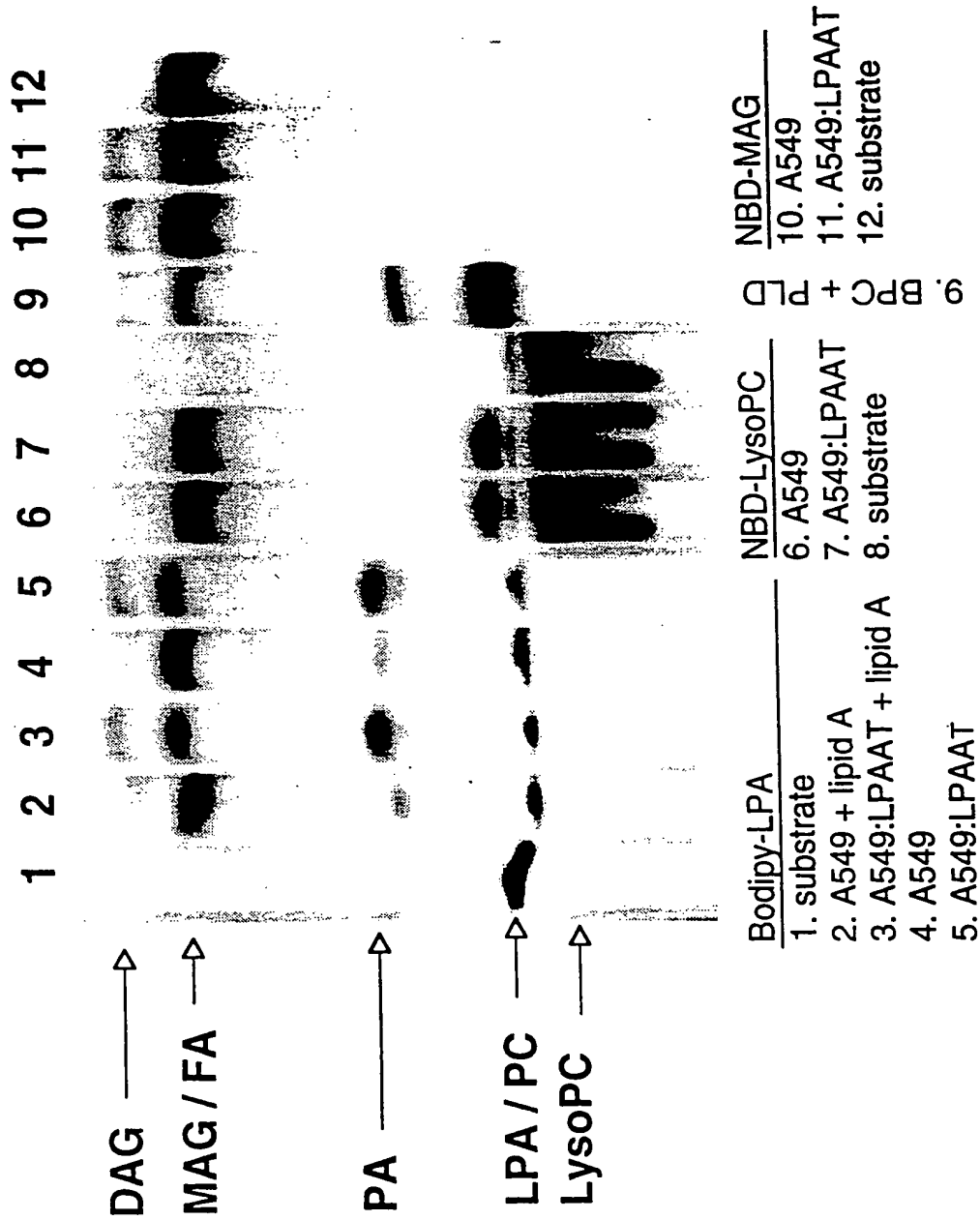
Figure 5 (continued)

	210	220	230	240	250	
Human LPAAT-β	201 <u>GERMREN</u> <u>LK</u>	<u>VW</u> <u>I</u> <u>Y</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>N</u>	<u>D</u> <u>N</u> <u>G</u> <u>D</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>KK</u> <u>G</u> <u>A</u> <u>F</u> <u>Y</u> <u>L</u> <u>—</u> <u>A</u>	<u>V</u> <u>Q</u> <u>A</u> <u>Q</u> <u>V</u> <u>P</u> <u>I</u> <u>V</u> <u>P</u> <u>V</u>
Human LPAAT-α	201 <u>AQ</u> <u>T</u> <u>L</u> <u>L</u> <u>T</u> <u>Q</u> <u>D</u> <u>V</u> <u>R</u>	<u>VW</u> <u>V</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>N</u>	<u>H</u> <u>N</u> <u>G</u> <u>S</u> <u>M</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>K</u> <u>R</u> <u>G</u> <u>A</u> <u>F</u> <u>H</u> <u>L</u> <u>—</u> <u>A</u>	<u>V</u> <u>Q</u> <u>A</u> <u>Q</u> <u>V</u> <u>P</u> <u>I</u> <u>V</u> <u>P</u> <u>I</u>
Yeast LPAAT	201 <u>LE</u> <u>N</u> <u>V</u> <u>K</u> <u>K</u> <u>N</u> <u>K</u> <u>R</u> <u>A</u>	<u>LW</u> <u>V</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>S</u>	<u>Y</u> <u>T</u> <u>S</u> <u>E</u> <u>L</u> <u>T</u> <u>M</u> <u>L</u> <u>P</u> <u>F</u>	<u>KK</u> <u>G</u> <u>A</u> <u>F</u> <u>H</u> <u>L</u> <u>—</u> <u>A</u>	<u>Q</u> <u>Q</u> <u>K</u> <u>I</u> <u>P</u> <u>I</u> <u>V</u> <u>P</u> <u>V</u>	
E.coli LPAAT	201 <u>VN</u> <u>H</u> <u>F</u> <u>K</u> <u>K</u> <u>R</u> <u>R</u> <u>I</u> <u>S</u>	<u>IW</u> <u>M</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>S</u>	<u>R</u> <u>G</u> <u>R</u> <u>G</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>K</u> <u>T</u> <u>G</u> <u>A</u> <u>F</u> <u>—</u> <u>H</u> <u>A</u> <u>A</u>	<u>I</u> <u>A</u> <u>A</u> <u>G</u> <u>V</u> <u>P</u> <u>I</u> <u>I</u> <u>P</u> <u>V</u>
H.influenzae	201 <u>ARR</u> <u>I</u> <u>N</u> <u>E</u> <u>D</u> <u>N</u> <u>L</u> <u>S</u>	<u>IW</u> <u>M</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>N</u>	<u>R</u> <u>G</u> <u>R</u> <u>G</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>K</u> <u>T</u> <u>G</u> <u>A</u> <u>F</u> <u>T</u> <u>H</u> <u>A</u> <u>A</u>	<u>I</u> <u>S</u> <u>A</u> <u>G</u> <u>V</u> <u>P</u> <u>I</u> <u>I</u> <u>P</u> <u>V</u>
S.typhimurium	201 <u>VN</u> <u>H</u> <u>F</u> <u>K</u> <u>K</u> <u>R</u> <u>R</u> <u>I</u> <u>S</u>	<u>IW</u> <u>M</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>S</u>	<u>R</u> <u>G</u> <u>R</u> <u>G</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>K</u> <u>T</u> <u>G</u> <u>A</u> <u>F</u> <u>T</u> <u>H</u> <u>A</u> <u>A</u>	<u>I</u> <u>A</u> <u>A</u> <u>G</u> <u>V</u> <u>P</u> <u>I</u> <u>I</u> <u>P</u> <u>V</u>
L.douglasi	201 <u>VR</u> <u>V</u> <u>I</u> <u>T</u> <u>E</u> <u>K</u> <u>N</u> <u>L</u> <u>S</u>	<u>L</u> <u>I</u> <u>M</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>S</u>	<u>G</u> <u>D</u> <u>G</u> <u>R</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>KK</u> <u>G</u> <u>F</u> <u>V</u> <u>H</u> <u>L</u> <u>—</u> <u>A</u>	<u>L</u> <u>Q</u> <u>S</u> <u>H</u> <u>L</u> <u>P</u> <u>I</u> <u>V</u> <u>P</u> <u>M</u>
C. nucifera	201 <u>AR</u> <u>A</u> <u>W</u> <u>K</u> <u>K</u> <u>N</u> <u>L</u> <u>S</u>	<u>L</u> <u>I</u> <u>I</u> <u>F</u> <u>P</u> <u>E</u> <u>G</u> <u>T</u> <u>R</u> <u>S</u>	<u>K</u> <u>T</u> <u>G</u> <u>R</u> <u>L</u> <u>—</u>	<u>LP</u> <u>F</u>	<u>KK</u> <u>G</u> <u>F</u> <u>I</u> <u>H</u> <u>F</u> <u>T</u> <u>I</u> <u>A</u>	<u>L</u> <u>Q</u> <u>T</u> <u>R</u> <u>L</u> <u>P</u> <u>I</u> <u>V</u> <u>P</u> <u>M</u>
	260	270	280	290	300	
Human LPAAT-β	251 <u>VY</u> <u>S</u> <u>S</u> <u>F</u> <u>S</u> <u>S</u> <u>—</u> <u>F</u>	<u>Y</u> <u>N</u> <u>T</u> <u>K</u> <u>K</u> <u>K</u> <u>F</u> <u>F</u> <u>T</u> <u>S</u>	<u>G</u> <u>T</u> <u>V</u> <u>T</u> <u>Y</u> <u>Q</u> <u>V</u> <u>L</u> <u>E</u> <u>A</u>	<u>I</u> <u>P</u> <u>T</u> <u>S</u> <u>G</u> <u>L</u> <u>T</u> <u>A</u> <u>A</u> <u>D</u>	<u>V</u> <u>P</u> <u>A</u> <u>L</u> <u>V</u> <u>D</u> <u>I</u> <u>C</u> <u>H</u> <u>R</u>	
Human LPAAT-α	251 <u>VM</u> <u>S</u> <u>S</u> <u>Y</u> <u>Q</u> <u>D</u> <u>—</u> <u>F</u>	<u>Y</u> <u>C</u> <u>K</u> <u>K</u> <u>E</u> <u>R</u> <u>R</u> <u>F</u> <u>T</u> <u>S</u>	<u>G</u> <u>Q</u> <u>Q</u> <u>V</u> <u>R</u> <u>V</u> <u>L</u> <u>P</u> <u>P</u>	<u>V</u> <u>P</u> <u>T</u> <u>E</u> <u>G</u> <u>L</u> <u>T</u> <u>P</u> <u>D</u> <u>D</u>	<u>V</u> <u>P</u> <u>A</u> <u>L</u> <u>A</u> <u>D</u> <u>R</u> <u>V</u> <u>R</u> <u>H</u>	
Yeast LPAAT	251 <u>VV</u> <u>S</u> <u>N</u> <u>I</u> <u>S</u> <u>T</u> <u>—</u> <u>L</u>	<u>V</u> <u>S</u> <u>P</u> <u>K</u> <u>Y</u> <u>G</u> <u>V</u> <u>F</u> <u>N</u> <u>R</u>	<u>G</u> <u>M</u> <u>I</u> <u>V</u> <u>R</u> <u>I</u> <u>L</u> <u>K</u> <u>P</u>	<u>I</u> <u>S</u> <u>T</u> <u>E</u> <u>N</u> <u>L</u> <u>T</u> <u>K</u> <u>D</u> <u>K</u>	<u>I</u> <u>G</u> <u>E</u> <u>F</u> <u>A</u> <u>E</u> <u>K</u> <u>V</u> <u>R</u> <u>D</u>	
E.coli LPAAT	251 <u>CV</u> <u>S</u> <u>T</u> <u>T</u> <u>S</u> <u>—</u> <u>—</u>	<u>N</u> <u>K</u> <u>I</u> <u>N</u> <u>L</u> <u>N</u> <u>R</u> <u>I</u> <u>H</u> <u>N</u>	<u>G</u> <u>L</u> <u>V</u> <u>I</u> <u>V</u> <u>E</u> <u>M</u> <u>L</u> <u>P</u> <u>P</u>	<u>I</u> <u>D</u> <u>V</u> <u>S</u> <u>Q</u> <u>G</u> <u>K</u> <u>D</u> <u>Q</u>	<u>V</u> <u>R</u> <u>E</u> <u>L</u> <u>A</u> <u>A</u> <u>H</u> <u>C</u> <u>R</u> <u>—</u>	
H.influenzae	251 <u>VC</u> <u>S</u> <u>S</u> <u>T</u> <u>H</u> <u>—</u> <u>—</u>	<u>N</u> <u>K</u> <u>I</u> <u>N</u> <u>L</u> <u>N</u> <u>R</u> <u>W</u> <u>D</u> <u>N</u>	<u>G</u> <u>K</u> <u>V</u> <u>I</u> <u>C</u> <u>E</u> <u>I</u> <u>M</u> <u>D</u> <u>P</u>	<u>I</u> <u>D</u> <u>V</u> <u>S</u> <u>G</u> <u>Y</u> <u>T</u> <u>K</u> <u>D</u> <u>N</u>	<u>V</u> <u>R</u> <u>D</u> <u>L</u> <u>A</u> <u>A</u> <u>Y</u> <u>C</u> <u>H</u> <u>F</u>	
S.typhimurium	251 <u>CV</u> <u>S</u> <u>N</u> <u>I</u> <u>S</u> <u>—</u> <u>—</u>	<u>N</u> <u>K</u> <u>V</u> <u>N</u> <u>L</u> <u>N</u> <u>R</u> <u>I</u> <u>N</u> <u>N</u>	<u>G</u> <u>L</u> <u>V</u> <u>I</u> <u>V</u> <u>E</u> <u>M</u> <u>L</u> <u>P</u> <u>P</u>	<u>V</u> <u>D</u> <u>V</u> <u>S</u> <u>E</u> <u>X</u> <u>G</u> <u>K</u> <u>D</u> <u>Q</u>	<u>V</u> <u>R</u> <u>E</u> <u>L</u> <u>A</u> <u>A</u> <u>H</u> <u>C</u> <u>R</u> <u>F</u>	
L.douglasi	251 <u>I</u> <u>L</u> <u>T</u> <u>G</u> <u>T</u> <u>H</u> <u>L</u> <u>A</u> <u>W</u> <u>F</u>	<u>T</u> <u>R</u> <u>K</u> <u>G</u> <u>I</u> <u>F</u> <u>R</u> <u>V</u> <u>R</u> <u>P</u>	<u>V</u> <u>P</u> <u>I</u> <u>T</u> <u>V</u> <u>K</u> <u>Y</u> <u>L</u> <u>P</u> <u>P</u>	<u>I</u> <u>N</u> <u>T</u> <u>D</u> <u>D</u> <u>W</u> <u>T</u> <u>V</u> <u>D</u> <u>K</u>	<u>I</u> <u>D</u> <u>D</u> <u>Y</u> <u>V</u> <u>K</u> <u>M</u> <u>I</u> <u>H</u> <u>D</u>	
C. nucifera	251 <u>VL</u> <u>T</u> <u>G</u> <u>T</u> <u>H</u> <u>L</u> <u>A</u> <u>W</u> <u>—</u>	<u>—</u> <u>R</u> <u>K</u> <u>N</u> <u>S</u> <u>L</u> <u>R</u> <u>V</u> <u>R</u> <u>P</u>	<u>A</u> <u>P</u> <u>I</u> <u>T</u> <u>V</u> <u>K</u> <u>Y</u> <u>F</u> <u>S</u> <u>P</u>	<u>I</u> <u>K</u> <u>T</u> <u>D</u> <u>D</u> <u>W</u> <u>E</u> <u>E</u> <u>E</u> <u>K</u>	<u>I</u> <u>N</u> <u>H</u> <u>Y</u> <u>V</u> <u>E</u> <u>M</u> <u>I</u> <u>H</u> <u>F</u>	

Figure 5 (continued)

	310	320	330	340	350
Human LPAAT- β	301 <u>AMRTTFIHIS</u>	<u>KTFQENGATA</u>	<u>GSGVQPAQ*</u>	-----	-----
Human LPAAT- α	301 <u>SMLTTFREIS</u>	<u>TDGRGGDYL</u>	<u>KKPGGG*</u>	-----	-----
Yeast LPAAT	301 <u>QMVDILKEIG</u>	<u>YSPAINDTTL</u>	<u>PPQAIEYAAL</u>	<u>QHDKKVNKKI</u>	<u>KNEPVPSVSI</u>
E.coli LPAAT	301 <u>-SIMEQKIAE</u>	<u>LDKEVA</u>	<u>-ER</u>	<u>FAAGKV*</u>	-----
H.influenzae	301 <u>TILMEKRIAE</u>	<u>LDDELA</u>	-----	<u>KGN*</u>	-----
S.typhimuriu	301 <u>TALMEQKIAE</u>	<u>LDKEVA</u>	<u>-ER</u>	<u>EATGKV*</u>	-----
L.douglassi	301 <u>IYVRNLPASQ</u>	<u>KPLGS</u>	<u>-TNR</u>	<u>-S-K*</u>	-----
C. nucifera	301 <u>TALVVDHLPE</u>	<u>SQKPLVSKGR</u>	<u>DASGRS</u>	<u>NS*</u>	-----
	360	370	380	390	
Human LPAAT- β	351 -----	-----	-----	-----	-----
Human LPAAT- α	351 -----	-----	-----	-----	-----
Yeast LPAAT	351 <u>SNDVNIHNEG</u>	<u>SSVKKM*</u>	-----	-----	-----
E.coli LPAAT	351 -----	-----	-----	-----	-----
H.influenzae	351 -----	-----	-----	-----	-----
S.typhimuriu	351 -----	-----	-----	-----	-----
L.douglassi	351 -----	-----	-----	-----	-----
C. nucifera	351 -----	-----	-----	-----	-----

Figure 6



TLC Analysis of Acyltransferase Activity

**Induction of TNF in A549 LPAAT or A549
cells stimulated with mTNF and IL-1**

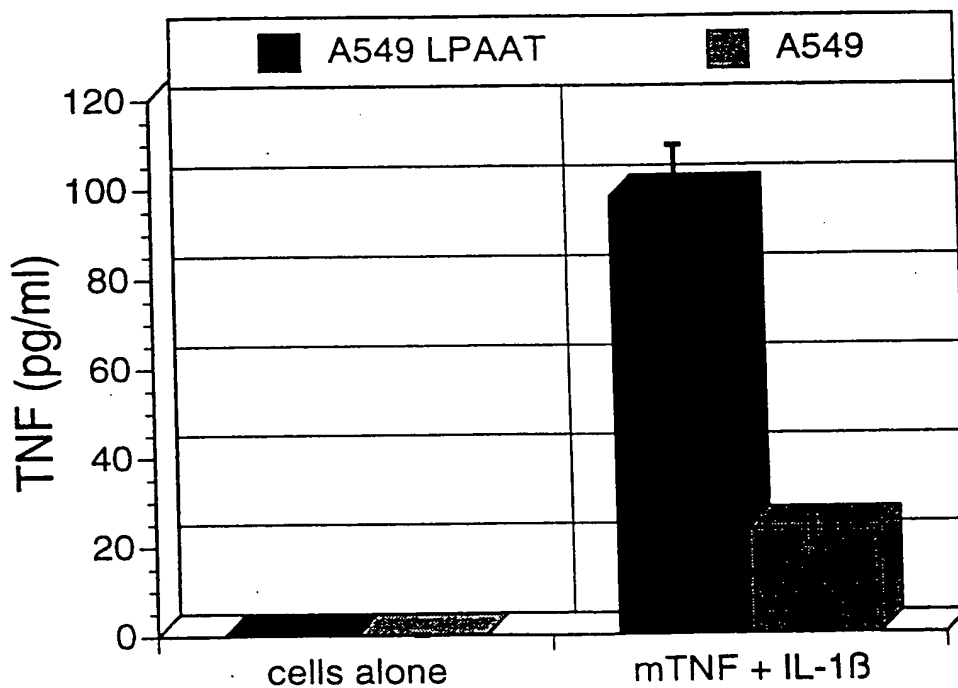


Figure 7

**Induction of IL-6 in A549 LPAAT or A549
cells stimulated with mTNF and IL-1**

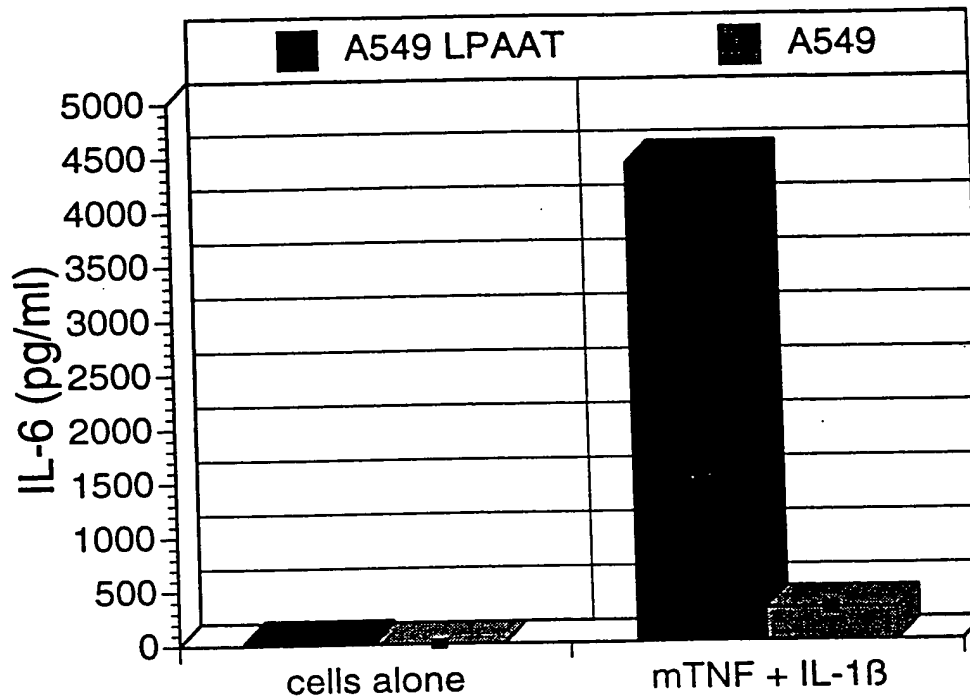


Figure 8

Title: METHOD OF SCREENING
COMPOUNDS THAT INHIBIT
LYSOPHOSPHATIDIC ACID
ACYLTRANSFERASE
Inventors: David W. LEUNG et al.
Docket No.: 077319-0381

Figure 9 Translated sequence of human LPAAT-yl

TCTATGAAACCAACATACATGGCGTTTGCATCACAGTTGGAGTCAGATGTGAGCCCGGAG	60
GGCAGGTGTCTGGCTTGTCCACCCGGAAGCCCTGAGGGCAGCTGTTCCCACTGGCTCTGC	120
TGACCTTGTGCCTTGGACGGCTGTCTCAGCGAGGGGCCGTGCACCCGCTCCTGAGCAGC	180
GCC <u>ATG</u> GGC CTG CTG GCC TTC CTG AAG ACC CAG TTC GTG CTG CAC	225
Met Gly Leu Leu Ala Phe Leu Lys Thr Gln Phe Val Leu His	
5 10	
CTG CTG GTC GGC TTT GTC TTC GTG GTG AGT GGT CTG GTC ATC AAC	270
Leu Leu Val Gly Phe Val Phe Val Val Ser Gly Leu Val Ile Asn	
15 20 25	
TTC GTC CAG CTG TGC ACG CTG GCG CTC TGG CCG GTC AGC AAG CAG	315
Phe Val Gln Leu Cys Thr Leu Ala Leu Trp Pro Val Ser Lys Gln	
30 35 40	
CTC TAC CGC CGC CTC AAC TGC CGC CTC GCA TAC TCA CTC TGG AGC	360
Leu Tyr Arg Arg Leu Asn Cys Arg Leu Ala Tyr Ser Leu Trp Ser	
45 50 55	
CAA CTG GTC ATG CTG CTG GAG TGG TGG TCC TGC ACG GAG TGT ACA	405
Gln Leu Val Met Leu Leu Glu Trp Trp Ser Cys Thr Glu Cys Thr	
60 65 70	
CTG TTC ACG GAC CAG GCC ACG GTA GAG CGC TTT GGG AAG GAG CAC	450
Leu Phe Thr Asp Gln Ala Thr Val Glu Arg Phe Gly Lys Glu His	
75 80 85	
GCA GTC ATC ATC CTC AAC CAC AAC TTC GAG ATC GAC TTC CTC TGT	495
Ala Val Ile Ile Leu Asn His Asn Phe Glu Ile Asp Phe Leu Cys	
90 95 100	
GGG TGG ACC ATG TGT GAG CGC TTC GGA GTG CTG GGG AGC TCC AAG	540
Gly Trp Thr Met Cys Glu Arg Phe Gly Val Leu Gly Ser Ser Lys	
105 110 115	
GTC CTC GCT AAG AAG GAG CTG CTC TAC GTG CCC CTC ATC GGC TGG	585
Val Leu Ala Lys Lys Glu Leu Leu Tyr Val Pro Leu Ile Gly Trp	
120 125 130	
ACG TGG TAC TTT CTG GAG ATT GTG TTC TGC AAG CGG AAG TGG GAG	630
Thr Trp Tyr Phe Leu Glu Ile Val Phe Cys Lys Arg Lys Trp Glu	
135 140 145	
GAG GAC CGG GAC ACC GTG GTC GAA GGG CTG AGG CGC CTG TCG GAC	675
Glu Asp Arg Asp Thr Val Val Glu Gly Leu Arg Arg Leu Ser Asp	
150 155 160	
TAC CCC GAG TAC ATG TGG TTT CTC CTG TAC TGC GAG GGG ACG CGC	720
Tyr Pro Glu Tyr Met Trp Phe Leu Leu Tyr Cys Glu Gly Thr Arg	
165 170 175	
TTC ACG GAG ACC AAG CAC CGC GTT AGC ATG GAG GTG GCG GCT GCT	765
Phe Thr Glu Thr Lys His Arg Val Ser Met Glu Val Ala Ala Ala	
180 185 190	
AAG GGG CTT CCT GTC CTC AAG TAC CAC CTG CTG CCG CGG ACC AAG	810
Lys Gly Leu Pro Val Leu Lys Tyr His Leu Leu Pro Arg Thr Lys	
195 200 205	
GGC TTC ACC ACC GCA GTC AAG TGC CTC CGG GGG ACA GTC GCA GCT	855
Gly Phe Thr Thr Ala Val Lys Cys Leu Arg Gly Thr Val Ala Ala	
210 215 220	
GTC TAT GAT GTA ACC CTG AAC TTC AGA GGA AAC AAG AAC CCG TCC	900
Val Tyr Asp Val Thr Leu Asn Phe Arg Gly Asn Lys Asn Pro Ser	
225 230 235	
CTG CTG GGG ATC CTC TAC GGG AAG AAG TAC GAG GCG GAC ATG TGC	945
Leu Leu Gly Ile Leu Tyr Gly Lys Lys Tyr Glu Ala Asp Met Cys	
240 245 250	
GTG AGG AGA TTT CCT CTG GAA GAC ATC CCG CTG GAT GAA AAG GAA	990
Val Arg Arg Phe Pro Leu Glu Asp Ile Pro Leu Asp Glu Lys Glu	
255 260 265	
GCA GCT CAG TGG CTT CAT AAA CTG TAC CAG GAG AAG GAC GCG CTC	1035

Inventors: David W. LEUNG et al.
Docket No.: 077319-0381

	Ala	Gln	Trp	Leu	His	Lys	Leu	Tyr	Gln	Glu	Lys	Asp	Ala	Leu	
270	CAG	GAG	ATA	TAT	AAT	CAG	AAG	GGC	ATG	TTT	CCA	GGG	GAG	CAG	TTT
	Gln	Glu	Ile	Tyr	Asn	Gln	Lys	Gly	Met	Phe	Pro	Gly	Glu	Gln	Phe
285	AAG	CCT	GCC	CGG	AGG	CCG	TGG	ACC	CTC	CTG	AAC	TTC	CTG	TCC	TGG
	Lys	Pro	Ala	Arg	Arg	Pro	Trp	Thr	Leu	Leu	Asn	Phe	Leu	Ser	Trp
300	GCC	ACC	ATT	CTC	CTG	TCT	CCC	CTC	TTC	AGT	TTT	GTC	TTG	GGC	GTC
	Ala	Thr	Ile	Leu	Leu	Ser	Pro	Leu	Phe	Ser	Phe	Val	Leu	Gly	Val
315	TTT	GCC	AGC	GGA	TCA	CCT	CTC	CTG	ATC	CTG	ACT	TTC	TTG	GGG	TTT
	Phe	Ala	Ser	Gly	Ser	Pro	Leu	Leu	Ile	Leu	Thr	Phe	Leu	Gly	Phe
330	GTG	GGA	GCA	GCT	TCC	TTT	GGA	GTT	CGC	AGA	CTG	ATA	GGA	GTA	ACT
	Val	Gly	Ala	Ala	Ser	Phe	Gly	Val	Arg	Arg	Leu	Ile	Gly	Val	Thr
345	GAG	ATA	GAA	AAA	GGC	TCC	AGC	TAC	GGA	AAC	CAA	GAG	TTT	AAG	AAA
	Glu	Ile	Glu	Lys	Gly	Ser	Ser	Tyr	Gly	Asn	Gln	Glu	Phe	Lys	Lys
360	AAG	GAA	TAA	TTA	TGG	GCTGTG	ACTGA	ACA	CACG	CGGCCCTG	ACGGTGGT	TATCC	AGTT		
	Lys	Glu	***												
	AACTCAA	AAACCA	ACACAC	AGAGTGC	AGGAAA	AGACAATT	AGAACTAT	TTTTTCT	TATTAA						
	CTGGTG	ACTAAT	TAAACAAA	AACTTG	AGCCAAG	AGTAAAGA	ATTGAGA	AGGCCTGT	CAGG						
	TGAAGT	CTTCAG	CTCCCC	ACAGCG	CAGGGT	CCCCAG	CATCTCC	ACGCGCG	CCCCGTGG	GAGG					
	TGGGTC	CGGCGG	AGAGGC	CTCCCC	GCGGAC	GCCGTCT	CTCCAGA	ACTCCG	CTCCAAG	AG					
	GGACCT	TTGGCT	GCTTTCT	CTCCTT	AAACTT	AGATCAA	ATTTTAAAA	AAAAAAAA	AAAAAA						

Title: METHOD OF SCREENING
COMPOUNDS THAT INHIBIT
LYSOPHOSPHATIDIC ACID
ACYLTRANSFERASE

Inventors: David W. LEUNG et al.

Docket No.: 077319-0381

Figure 10 Translated sequence of LPAAT-γ2 cDNA

CACGCTGGCGCTCTGGCCGGTCAGCAAGCAGCTCTACCGCCGCCCTCAACTGCCGCCTCGCC	61
TACTCACTCTGGAGCCTAGCACAAAAGTAGAAGCAACCCAAGCACCTGTCACTGGAGACT	121
AATTATGCGGCACCCATACAGGGACCCTCTGCGGCCATCATGGAGAGCCTTCATCTTGCC	181
CGTACAGTTTAAAGCGAAAAAGGAAGTATACAACAAAGTCCATAACTGGTC	238
Met Leu	
CTG GAG TGG TGG TCC TGC ACG GAG TGT ACA CTG TTC ACG GAC CAG	283
Leu Glu Trp Trp Ser Cys Thr Glu Cys Thr Leu Phe Thr Asp Gln	
5 10 15	
GCC ACG GTA GAG CGC TTT GGG AAG GAG CAC GCA GTC ATC ATC CTC	328
Ala Thr Val Glu Arg Phe Gly Lys Glu His Ala Val Ile Ile Leu	
20 25 30	
AAC CAC AAC TTC GAG ATC GAC TTC CTC TGT GGG TGG ACC ATG TGT	373
Asn His Asn Phe Glu Ile Asp Phe Leu Cys Gly Trp Thr Met Cys	
35 40 45	
GAG CGC TTC GGA GTG CTG GGG AGC TCC AAG GTC CTC GCT AAG AAG	418
Glu Arg Phe Gly Val Leu Gly Ser Ser Lys Val Leu Ala Lys Lys	
50 55 60	
GAG CTG CTC TAC GTG CCC CTC ATC GGC TGG ACG TGG TAC TTT CTG	463
Glu Leu Leu Tyr Val Pro Leu Ile Gly Trp Thr Trp Tyr Phe Leu	
65 70 75	
GAG ATT GTG TTC TGC AAG CGG AAG TGG GAG GAG GAC CGG GAC ACC	508
Glu Ile Val Phe Cys Lys Arg Lys Trp Glu Glu Asp Arg Asp Thr	
80 85 90	
GTG GTC GAA GGG CTG AGG CGC CTG TCG GAC TAC CCC GAG TAC ATG	553
Val Val Glu Gly Leu Arg Arg Leu Ser Asp Tyr Pro Glu Tyr Met	
95 100 105	
TGG TTT CTC CTG TAC TGC GAG GGG ACG CGC TTC ACG GAG ACC AAG	598
Trp Phe Leu Leu Tyr Cys Glu Gly Thr Arg Phe Thr Glu Thr Lys	
110 115 120	
CAC CGC GTT AGC ATG GAG GTG GCG GCT GCT AAG GGG CTT CCT GTC	643
His Arg Val Ser Met Glu Val Ala Ala Ala Lys Gly Leu Pro Val	
125 130 135	
CTC AAG TAC CAC CTG CTG CCG CGG ACC AAG GGC TTC ACC ACC GCA	688
Leu Lys Tyr His Leu Leu Pro Arg Thr Lys Gly Phe Thr Thr Ala	
140 145 150	
GTC AAG TGC CTC CGG GGG ACA GTC GCA GCT GTC TAT GAT GTA ACC	733
Val Lys Cys Leu Arg Gly Thr Val Ala Ala Val Tyr Asp Val Thr	
155 160 165	
CTG AAC TTC AGA GGA AAC AAG AAC CCG TCC CTG CTG GGG ATC CTC	778
Leu Asn Phe Arg Gly Asn Lys Asn Pro Ser Leu Leu Gly Ile Leu	
170 175 180	
TAC GGG AAG AAG TAC GAG GCG GAC ATG TGC GTG AGG AGA TTT CCT	823
Tyr Gly Lys Lys Tyr Glu Ala Asp Met Cys Val Arg Arg Phe Pro	
185 190 195	
CTG GAA GAC ATC CCG CTG GAT GAA AAG GAA GCA GCT CAG TGG CTT	868
Leu Glu Asp Ile Pro Leu Asp Glu Lys Glu Ala Ala Gln Trp Leu	
200 205 210	
CAT AAA CTG TAC CAG GAG AAG GAC GCG CTC CAG GAG ATA TAT AAT	913
His Lys Leu Tyr Gln Glu Lys Asp Ala Leu Gln Glu Ile Tyr Asn	
215 220 225	
CAG AAG GGC ATG TTT CCA GGG GAG CAG TTT AAG CCT GCC CGG AGG	958
Gln Lys Gly Met Phe Pro Gly Glu Gln Phe Lys Pro Ala Arg Arg	
230 235 240	
CCG TGG ACC CTC CTG AAC TTC CTG TCC TGG GCC ACC ATT CTC CTG	1003
Pro Trp Thr Leu Leu Asn Phe Leu Ser Trp Ala Thr Ile Leu Leu	
245 250 255	
TCT CCC CTC TTC AGT TTT GTC TTG GGC GTC TTT GCC AGC GGA TCA	1048
Ser Pro Leu Phe Ser Phe Val Leu Gly Val Phe Ala Ser Gly Ser	

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[illegible]

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ACYLTRANSFERASE
Inventors: David W. LEUNG et al.
Docket No.: 077319-0381

Figure 11 Translated sequence of human LPAAT-δ

TGAACCCAGCCGGCTCCATCTCAGCTTCTGGTTTCTAAGTCCATGTGCCAAAGGCTGCCAG	61
GAAGGAGACGCCTTCCTGAGTCCTGGATCTTTCTTCCTTCTGGAAATCTTTGACTGTGGG	121
TAGTTATTTATTTCTGAATAAGAGCGTCCACGCATC ATG GAC CTC GCG GGA CTG	175
Met Asp Leu Ala Gly Leu	
5	
CTG AAG TCT CAG TTC CTG TGC CAC CTG GTC TTC TGC TAC GTC TTT	220
Leu Lys Ser Gln Phe Leu Cys His Leu Val Phe Cys Tyr Val Phe	
10	
ATT GCC TCA GGG CTA ATC ATC AAC ACC ATT CAG CTC TTC ACT CTC	265
Ile Ala Ser Gly Leu Ile Ile Asn Thr Ile Gln Leu Phe Thr Leu	
25	
CTC CTC TGG CCC ATT AAC AAG CAG CTC TTC CGG AAG ATC AAC TGC	310
Leu Leu Trp Pro Ile Asn Lys Gln Leu Phe Arg Lys Ile Asn Cys	
40	
AGA CTG TCC TAT TGC ATC TCA AGC CAG CTG GTG ATG CTG CTG GAG	355
Arg Leu Ser Tyr Cys Ile Ser Ser Gln Leu Val Met Leu Leu Glu	
55	
TGG TGG TCG GGC ACG GAA TGC ACC ATC TTC ACG GAC CCG CGC GCC	400
Trp Trp Ser Gly Thr Glu Cys Thr Ile Phe Thr Asp Pro Arg Ala	
70	
TAC CTC AAG TAT GGG AAG GAA AAT GCC ATC GTG GTT CTC AAC CAC	445
Tyr Leu Lys Tyr Gly Lys Glu Asn Ala Ile Val Val Leu Asn His	
85	
AAG TTT GAA ATT GAC TTT CTG TGT GGC TGG AGC CTG TCC GAA CGC	490
Lys Phe Glu Ile Asp Phe Leu Cys Gly Trp Ser Leu Ser Glu Arg	
100	
TTT GGG CTG TTA GGG GGC TCC AAG GTC CTG GCC AAG AAA GAG CTG	535
Phe Gly Leu Leu Gly Gly Ser Lys Val Leu Ala Lys Lys Glu Leu	
115	
GCC TAT GTC CCA ATT ATC GGC TGG ATG TGG TAC TTC ACC GAG ATG	580
Ala Tyr Val Pro Ile Ile Gly Trp Met Trp Tyr Phe Thr Glu Met	
130	
GTC TTC TGT TCG CGC AAG TGG GAG CAG GAT CGC AAG ACG GTT GCC	625
Val Phe Cys Ser Arg Lys Trp Glu Gln Asp Arg Lys Thr Val Ala	
145	
ACC AGT TTG CAG CAC CTC CGG GAC TAC CCC GAG AAG TAT TTT TTC	670
Thr Ser Leu Gln His Leu Arg Asp Tyr Pro Glu Lys Tyr Phe Phe	
160	
CTG ATT CAC TGT GAG GGC ACA CGG TTC ACG GAG AAG AAG CAT GAG	715
Leu Ile His Cys Glu Gly Thr Arg Phe Thr Glu Lys Lys His Glu	
175	
ATC AGC ATG CAG GTG GCC CGG GCC AAG GGG CTG CCT CGC CTC AAG	760
Ile Ser Met Gln Val Ala Arg Ala Lys Gly Leu Pro Arg Leu Lys	
190	
CAT CAC CTG TTG CCA CGA ACC AAG GGC TTC GCC ATC ACC GTG AGG	805
His His Leu Leu Pro Arg Thr Lys Gly Phe Ala Ile Thr Val Arg	
205	
AGC TTG AGA AAT GTA GTT TCA GCT GTA TAT GAC TGT ACA CTC AAT	850
Ser Leu Arg Asn Val Val Ser Ala Val Tyr Asp Cys Thr Leu Asn	
220	
TTC AGA AAT AAT GAA AAT CCA ACA CTG CTG GGA GTC CTA AAC GGA	895
Phe Arg Asn Asn Glu Asn Pro Thr Leu Leu Gly Val Leu Asn Gly	
235	
AAG AAA TAC CAT GCA GAT TTG TAT GTT AGG AGG ATC CCA CTG GAA	940
Lys Lys Tyr His Ala Asp Leu Tyr Val Arg Arg Ile Pro Leu Glu	
250	
GAC ATC CCT GAA GAC GAT GAC GAG TGC TCG GCC TGG CTG CAC AAG	985
Asp Ile Pro Glu Asp Asp Asp Glu Cys Ser Ala Trp Leu His Lys	
265	
270	
275	

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Figure 12

	10	20	30	40	50
LPAAT-γ1	MGLLAFLKTQ	FVLHLLVGfV	FVVSGLVINf	VQ-LCTLALW	PVSKQLYRRL
LPAAT-γ2	-----	-----	-----	-----	-----
LPAAT-δ	MDLAGLLKSQ	FLCHLVFCYV	FIASGLIINT	IQ-LFTLLW	PINKQLFRKI
	60	70	80	90	100
LPAAT-γ1	NCRLAYSLWS	QLVMlleWWS	CTECTLfTDQ	ATVERFGKEH	AVIILNHNfE
LPAAT-γ2	-----	---MLleWWS	CTECTLfTDQ	ATVERFGKEH	AVIILNHNfE
LPAAT-δ	NCRLSYCISS	QLVMlleWWS	GTECTIfTDP	RA ¹ LKYGKEN	AIVVLNHNKfE
	110	120	130	140	150
LPAAT-γ1	IDFLCGWTMC	ERFGVLGSSK	VLAKKELLYV	PLIGWTWYfL	EIVFCKRKWE
LPAAT-γ2	IDFLCGWTMC	ERFGVLGSSK	VLAKKELLYV	PLIGWTWYfL	EIVFCKRKWE
LPAAT-δ	IDFLCGWS ¹ IS	ERFGLLGSSK	VLAKKELAYV	PIIGWMWYfT	EMVFCSRKWE
	160	170	180	190	200
LPAAT-γ1	EDRDTVVEGL	RRLSDYPEYM	WFLLYCEGTR	FTETKHRVSM	EVAAAKGLPv
LPAAT-γ2	EDRDTVVEGL	RRLSDYPEYM	WFLLYCEGTR	FTETKHRVSM	EVAAAKGLPv
LPAAT-δ	QDR ¹ KTVATSL	QHLRDYPEKY	FFLIHCEGTR	FTEKKHEISM	QVARAKGLPR
	210	220	230	240	250
LPAAT-γ1	LKYHLLPRTK	GFTTAVKCLR	GTVAAYVDVT	LNF-RGNKNP	SLLGILYGKK
LPAAT-γ2	LKYHLLPRTK	GFTTAVKCLR	GTVAAYVDVT	LNF-RGNKNP	SLLGILYGKK
LPAAT-δ	LKHLLPRTK	GFAITVRSR	NVSAVYDCT	LNF-RNNENP	TL ¹ LGVLNGKK
	260	270	280	290	300
LPAAT-γ1	YEADMCVRRF	PLEDIPLDEK	EAAQWLHKLY	QEKDALQEiY	NQKGMFPGEQ
LPAAT-γ2	YEADMCVRRF	PLEDIPLDEK	EAAQWLHKLY	QEKDALQEiY	NQKGMFPGEQ
LPAAT-δ	YHADLYVRRi	PLEDIPEDDD	EC ¹ SAWLHKLY	QEKDAFQEeY	YR ¹ TGTFP ¹ ETP
	310	320	330	340	350
LPAAT-γ1	FKPARRPWTL	LNFLSWATIL	LSPLFSFVLG	VFASGSPLLI	---LTFLGFV
LPAAT-γ2	FKPARRPWTL	LNFLSWATIL	LSPLFSFVLG	VFASGSPLLI	---LTFLGFV
LPAAT-δ	MVPPRRPWTL	VNWLFWAS ¹ LV	LYPFFQFLVS	MIRSGSSLTL	---ASFILVf
	360	370	380		
LPAAT-γ1	GAASFGVRRL	IGVTEIEKGS	SYGNQEF---K	KKE*	
LPAAT-γ2	GAASFGVRRL	IGVTEIEKGS	SYGNQEF---K	KKE*	
LPAAT-δ	FVASVGVRWM	IGVTEIDKGS	AYGNSDSKQK	LND*	

Figure 13

